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THE MASSACHUSETTS STRATEGIC ENVIROTECHNOLOGY PARTNERSHIP

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STEP

1995 Annual Report

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Executive Office of Environmental Affairs

Executive Office of Economic Affairs

University of Massachusetts

THE MASSACHUSETTS STRATEGIC ENVIROTECHNOLOGY PARTNERSHIP

STEP

1995 Annual Report

Executive Office of Environmental Affairs

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March, 1996

To the People of the Commonwealth:

We are pleased to report to you on STEP — the Strategic Environmental Technology Partnership. This is a unique and exciting partnership among three key agencies of Massachusetts state government — the Executive Office of Environmental Affairs, the Executive Office of Economic Affairs, and the University of Massachusetts.

STEP is designed to make the Commonwealth a leader in developing and promoting new environmental and energy-efficient technology businesses so that we can simultaneously: (1) improve our environment, and (2) strengthen our economy.

Through this program, the two executive offices and UMass offer a comprehensive package of technical, business and regulatory assistance to help companies here in Massachusetts develop and implement new technologies and sell and market these technologies around the world. As a result, we are helping Massachusetts firms develop new ways to use energy, reduce waste, manufacture products, perform environmental cleanups and recycle waste into new products.

This initiative responds to the recommendations of a study group appointed by the State Legislature — called the Forum for Innovative and Alternative Technologies — which sought ways to create a climate which is more supportive of private investment in environmental technologies here in Massachusetts.

Important progress has been made in our first year of operation as new systems of technical, business and regulatory assistance were put into place, and an initial group of companies were assisted with their technologies. In 1996 and the years ahead, we expect to be able to report even more progress toward our goal of making Massachusetts a world leader — in both cleaning up the environment and in building our economy.

William M. Bulger

William M. Bulger
President
University of
Massachusetts

TRUDY COXE

Trudy Coxe
Secretary
Executive Office of
Environmental Affairs

David A. Tibbetts

David A. Tibbetts
Secretary
Executive Office of
Economic Affairs

Commonwealth of Massachusetts
Executive Office of Economic Affairs

STEP

The Strategic Envirotechnology Partnership (STEP) is an innovative effort begun in 1994 to promote the growth of new environmental and energy-efficient technologies in Massachusetts. STEP maximizes the existing resources of its partners, the Executive Office of Environmental Affairs, the Executive Office of Economic Affairs, and the University of Massachusetts, to enable the state to assist environmental business and enable Massachusetts' citizens to reap the positive benefits associated with the success of these new envirotechnologies.

STEP uses existing public services and state resources to help move innovative technologies along the road to commercial viability—step by step—offering a full range of coordinated state services targeted towards reducing the uncertainties commonly associated with envirotechnologies. These uncertainties translate into risks to government regulators, potential investors and potential clients or users, stifling the healthy growth of new envirotechnologies and new environmental business in the Commonwealth.

In 1993, the environmental technology industry in Massachusetts represented over $6 billion of our state's economy and employed over 60,000. Keeping this "green business" sector a mainstay of the Massachusetts economy is a challenge, but the mission of STEP is much broader. STEP seeks to identify and commercialize new innovative environmental and energy-efficiency technologies that will open up vast economic development opportunities in the Commonwealth, not simply keep "green business" in business. STEP's success will be achieved when the environmental technology industry becomes one of the most thriving sectors of our state's economy and we see new technologies - developed by Massachusetts' entrepreneurs - offering cost-effective, creative and sustainable ways to address the environmental problems of today and the challenges of tomorrow.

RESULTS:

- Effective new working relationships established among Executive Office of Environmental Affairs, Executive Office of Economic Affairs and UMass
- New systems for technical, business and regulatory assistance developed, tested and adapted
- More than 50 Massachusetts companies provided assistance through STEP
- Spin-off activities developed involving 150 more companies

STEP

BACKGROUND

In 1993, the Massachusetts Legislature created the Forum for Innovative and Alternative Technologies (the Forum) to evaluate the impact of tax credits as a means of supporting the development of innovative envirotechnologies. Chaired by the Secretary of Environmental Affairs, the Forum concluded that the major factor impeding the development of innovative envirotechnologies is the excessive uncertainty faced by private investors. This uncertainty stems mainly from the complex and voluminous federal, state and local regulations governing the testing, demonstration, permitting and use of environmental and energy-efficiency technologies.

Although environmental regulations have spurred the demand for new technologies and products, the regulations have also contributed to start-up problems uncommon to other emerging technologies. Very often, regulations act as a barrier to technology demonstration, resulting in performance data which is insufficient to promote commercial viability. In addition, the fact that regulatory requirements can and do change has caused uncertainty on the part of users and regulators and led to a pervasive reluctance to take risks on even well researched technologies. The Forum determined that the most effective mechanisms to enhance the development of innovative envirotechnologies are those which lower these uncertainties facing regulators, potential investors and potential users. STEP - the cornerstone of the Forum's recommendations - offers a full range of coordinated state services to reduce uncertainties associated with envirotechnologies at each stage of technology and business development.

STEP

SUMMARY OF STEP PROGRESS: YEAR ONE

The three STEP partners and their agencies and campuses have aggressively implemented STEP in its first year. Resources were dedicated to ensure that the program was up and running in a very short period of time. Under the leadership of the Executive Office of Environmental Affairs, the full range of STEP services are already being offered and companies are being serviced. Judging from the number of inquiries and the increasing quality of the technologies and businesses seeking out services, the initiative is on the mark. STEP is offering the kinds of services that new environmental and energy-efficiency companies need to move them along to full commercialization and business success.

In addition, STEP is receiving a good deal of national and international recognition. The program is viewed as cutting edge, comprehensive and flexible enough to meet the needs of technologies and companies at all stages of development. The National Governor's Association (NGA) in an Issues Brief dated September 18, 1995, explored the importance of technology verification in helping the environmental technology industry reach its potential and examined programs in California, Illinois, and the STEP initiative in Massachusetts as models for testing, assessing, and certifying innovative technologies.

The NGA found that STEP was "an efficient and versatile program for all types of technologies at every level of development." STEP has clearly put Massachusetts out in front in efforts to promote innovative technologies. Other states and countries are seeking to partner with STEP to share resources which could represent added opportunity to promote Massachusetts companies, goods and services.

The Interstate Technology Certification Agreement:

One example of the growing national interest in STEP is the recent agreement signed by the top environmental officials of Massachusetts, California, New Jersey and Illinois to promote the development of the environmental technology service industry. STEP is providing resources to implement this cross state certification agreement and acts as a conduit for envirotech firms to obtain information about, or to become involved in, the interstate initiatives which are now under development. Through this agreement, Massachusetts has greatly expanded the reach of its STEP commitment in this first year, and has opened up opportunities to developers and users of environmental technologies that have never before been available.

This interstate cooperation will make it quicker, easier and less expensive to develop and to use the new STEP assisted technologies.

STEP

1995: FIRST YEAR ACCOMPLISHMENTS

Since the signing of the STEP memorandum of agreement (MOU) in July 1994, the infrastructure necessary to effectively carry out the initiative was put in place and the program became fully functional. Through the Massachusetts Office of Business Development (MOBD), the primary point of entry to the program, companies began to access the full range of comprehensive environmental and energy related services offered by each partnering agency, including the Department of Environmental Protection (DEP), the Office of Technical Assistance (OTA), the Division of Energy Resources (DOER) and the four campuses of UMass. In its first year, STEP has received and responded to 65 requests for information from environmental companies. Seventeen of those companies submitted information to STEP and are receiving some type of assistance. Out of these companies, seven technologies have been reviewed by the STEP Technology Review Panel in its four meetings and are in the process of demonstration (including two pollution prevention technology demonstrations in Massachusetts manufacturing facilities and one 21E remediation technology demonstration is being partially supported by STEP).

In addition, DEP has assisted numerous Innovative Technologies (ITs) with permitting and regulatory guidance (including the permitting of seven new innovative on-site wastewater treatment technologies and the start up of a pilot program to allow the demonstration of bioremediation technologies on petroleum contaminated sites). MOBD has provided business services to those environmental businesses which have requested assistance. UMass has started up the provision of STEP related research and assistance at the Boston, Amherst, Lowell, and Dartmouth campuses that are reflective of the interests and expertise unique to each campus. Over 50 university-industry partnerships were initiated either directly by the University of Massachusetts or individual companies.

STEP

STEP SERVICES:

STEP services encompass business assistance, technology assessment and demonstration, expedited permitting, and applied research and development.

Business Assistance:

STEP recognized that the lack of sound business planning and financial expertise is a major obstacle for new envirotechnologies. Poor business and financial planning greatly reduce an entrepreneur's chances of securing the capital necessary to develop a new technology and to survive in a competitive marketplace. To address this problem, the STEP program began all STEP intake reviews with an assessment of the company's business plan by MOBD. In most cases, the entrepreneurs' plans were incomplete and MOBD either provided direct assistance to the company to fully develop the plan, or UMass in Boston provided direct assistance through its Environmental Business and Technology Center. MOBD and UMass also helped entrepreneurs in identifying potential markets and in identifying and accessing potential sources of public, quasi-public and private financing.

Technology Assessment and Demonstration:

STEP assembled a panel of independent experts to review environmental and energy-efficiency technologies. The Panel includes members with extensive expertise in the various aspects of technology development and use from industry, government, finance, and academia. A list of Panel members is found on page 16.

The Environmental Panel met for the first time in May, 1995 and then again in June, July, and September. They heard presentations from seven environmental companies seeking assistance to help develop and promote the use of a new environmental technology, service or product. The following summarizes the technologies reviewed:

- Blue Star Technologies, LTD, catalytic water treatment system that avoids the use of chemicals to inhibit corrosion and scale in boilers and cooling towers, thereby reducing metals and chemical residues in sewage sludge.
- Caldwell Environmental, Inc., bioaugmentation technology which uses differing systems of microbes, enzymes, and nutrients to address contamination by grease and oils, hydrocarbons, and organic toxins. Potential applications are wastewater treatment plants, grease traps and oil/water separators, hydrocarbon contaminated soils, and PCB contaminated sites.
- CLE, technology that thermophilically treats sludge to create soil conditioner or animal feed. The technology offers faster and odor-free treatment of sludge or food processing wastes.

- Solometex, Inc., new technology to remove metals in waste streams.
- Environmental Management Technologies, which has developed software to monitor storage tanks in gas stations.
- Filter Clean, which reconditions diesel engine air filters.
- AirXpert, which developed an indoor air quality monitoring system.

The Panel was also presented with the first STEP sponsored innovative product, a biodegradable compost bag developed by the Center for Environmentally Appropriate Material at UMass Lowell. The bag is being further tested and plans are underway for its production and distribution in Massachusetts.

Expedited Permitting and Guidance:

The existing regulatory framework does not encourage untried and unproven technologies. To aggressively address this issue, an Innovative Technology (IT) Program was initiated by DEP in late 1993 and now provides STEP with a number of vital services, including guidance to developers of new technologies on the best permit pathway for expedited reviews and permits. A team of DEP IT coordinators in each program and region is actively working to identify permitting and regulatory requirements, facilitate the review of new projects, and work with other DEP staff to develop and find opportunities to remove barriers to piloting or demonstrating innovation. In addition to the technologies presented to the Panel for review, the innovative on-site wastewater treatment technology process and the bioremediation pilot already mentioned above, DEP is working with a number of developers of new technologies to assist them through the permitting process. These technologies include the use of a heat exchanger to reduce VOCs in bakery emissions, greywater disposal systems, water vending machines, beach reclamation systems, fuel pellets, treatment of contaminated wastes, irrigation with POTW effluent and diesel fuel filter cleaning.

Applied Research and Development:

Envirotechnology entrepreneurs often do not have the resources to assemble all the technical information necessary to attract investment and sell products. This inability leads to early failures of good technologies and new businesses. In addition, technology improvements are needed in a number of critical areas to address today's environmental challenges in economically feasible ways.

STEP

To provide a comprehensive array of research, testing and technical assistance services to STEP, UMass was appropriated $1.5 million by the Massachusetts Legislature in 1995 as part of the UMass budget.

Each campus submitted its implementation plans and established STEP centers and institutes, working in close collaboration and coordination with the Joint Committee, established in November 1993 by the Secretary of Executive Office of Environmental Affairs and the UMass President. The Joint Committee is the body charged with the oversight of UMass STEP implementation by the STEP partners.

Each campus developed a unique STEP program based on its interest, expertise, and industry input. Amherst and Lowell used STEP to develop strategic and operational plans, and to fund the startup of centers that had been envisioned well in advance of the STEP initiative. Because these already planned centers focused on genuine STEP research needs, both campuses were in a position to use their STEP dollars immediately and effectively. They reached out to industry through the establishment of advisory bodies and created management entities to guide their programs.

While Amherst and Lowell moved forward aggressively to implement their STEP programs, Boston began doing so mid-year. Dartmouth pursued many activities consistent with the STEP mission, and began preparing a definitive STEP strategic plan towards the end of the year.

Each campus' accomplishments are briefly summarized below.

AMHERST:

The Amherst Campus established the National Environmental Technology for Waste Prevention Institute (NETI). With strong support and cooperation from the Massachusetts Chemical Technology Alliance and industry, NETI established an advisory board to advise the Campus on NETI operations and research agenda. The Environmental Institute is serving as NETI's management unit during the early phase of its operations. NETI, it is important to note, is being implemented with a minimum of new administrative positions and cost, in order to maximize the funding available for STEP-related research and service projects.

NETI concentrated on identifying and funding research projects that will contribute to its basic mission: to develop and assist in the transfer of manufacturing process technologies in order to minimize waste production. 76% of the first year NETI allocation of $600,000, or more than $455,000, has been awarded to 6 research projects selected, with considerable industry input, from among 19 proposals.

Remaining NETI funds have been allocated as follows: 11% for staff support, 8% for technology transfer activities, and 5% to support technology transfer and other services.

NETI held several workshops and meetings, reaching out to industry, state agencies, and the public to inaugurate its first year of operation. A chronology of NETI's first year events, the list of its advisory board members, a summary of its strategic plan, and a description of funded projects are included in its 1995 report, and the results of NETI-funded research are documented in NETI's Annual Report Summary for 1995 dated June 31, 1995.

In addition, the Division of Energy Resources (DOER), contracted the services of the Energy Analysis and Diagnostic Center (EADC) in Amherst for technology evaluations and to establish and provide staff to the STEP Technology Review Panel.

BOSTON:

The Boston Campus devoted most of its allocation of $300,000 to initiating projects to support the operations of the new Environmental Business and Technology Center and the Environmental Technology Testing Facility. Both entities are important components of the STEP Program. The Environmental Business and Technology Center assists the envirotech industry in technology commercialization, financing, and export. When operational, the Environmental Technology Testing Facility will cooperate with state agencies in the testing, assessing, and evaluating of innovative environmental technologies. This facility is not expected to be fully operational for several years until the acquisition and renovation of a suitable building to house it.

The Environmental Business and Technology Center was established as an operational entity and works closely with the Joint Committee and the state agencies to implement the STEP program. In addition, the Environmental Business and Technology Center hired an environmental technology specialist whose primary duty is to staff the STEP Environmental Technology Review Panel. This Panel is a critical component of the STEP Intake Process for evaluating environmental technologies submitted to the STEP program for review.

The need to develop reasonable strategic and implementation plans for both the Environmental Business Center and Environmental Technology Testing Facility, initially delayed their implementation of 1995 STEP activities. By mid-year, however, the Boston Campus had two full time staff, an organizational entity and an FY 96 STEP plan to link activities on the Boston campus, such as the concept design for the Testing Facility and GIS laboratory, directly to achieving the STEP program objectives. By year's end, the Center had assisted nineteen companies.

As part of its role, the Environmental Business and Technology Center:

- participated at the STEP meetings;
- helped prepare the analysis of technologies and businesses for the Panel to review;
- secured UMass facilities and identified and arranged faculty at the Boston campus and other campuses in the UMass system to conduct the testing, monitoring and business assistance recommended by the Panel for these companies; and
- led a consortium which received a $1 million federal EPA grant for public private projects to increase U.S. share of overseas markets.

LOWELL:

The Lowell Campus, through the University's Center for Environmentally Appropriate Materials (CEAM), allocated its $300,000 in STEP funds to establish the Chelsea Center for Materials Reuse. CEAM took several actions to make the Chelsea Center operational. Based upon an authorization last year by the Legislature, a feasibility study for the Chelsea Center was carried out, leading to additional funding in the 1995 budget to move forward with the Center.

The Chelsea Center action plan for 1994-95 has three main elements. First, the goal of establishing a facility in Chelsea was realized early in 1995 when the Center's office opened and an Executive Director was hired. $100,000 has been allocated to support the activities of the Center through the end of the fiscal year.

Second, the Center has funded two initial research projects. The first, "Research and Development of Counter-Pressure Intrusion Process for Production of Plastic Lumber" was carried out in collaboration with New England Electric and the Plastics Lumber Trade Association.

The second project, "Research and Development of Biodegradable Plastic Compost Bags—Optimization and Production of Biodegradable, Compostable Plastic Refuge Bags" is being carried out by CEAM researchers, Union Carbide, and Eastman Kodak on behalf of the Center.

Finally, in cooperation with the Joint Committee and its STEP Action Group, the Lowell Campus reserved funds for initial implementation of the STEP Intake Process. Technical evaluations were performed at the request of the Executive Office of Environmental Affairs on two STEP technologies.

DARTMOUTH:

UMass Dartmouth undertook 27 projects in FY95, in several of its departments, which related to the development of environmental industry in Massachusetts. The bulk of STEP related activities have been conducted by the Advanced Technology Center, the Center for Marine Science and Technology and the Colleges of Engineering and of Business & Industry. Other entities include the Chancellor's Office, Textile Science Department and the International Trade and Business Center.

These activities have included assisting the cranberry industry in the use of lasers to enhance the timing of the use of chemicals and reduce runoff; urban aquaculture; environmental trade mission; and recycling of fish processing wastes. The Advanced Technology Center conducted an assessment of a STEP technology, in support of a demonstration of the system. The International Trade and Business Center has assisted Ecological Engineering, Environmental Recovery Systems and Breakaway Technologies.

Although these activities have been undertaken largely outside of the purview of the Joint Committee, they are consistent with the STEP mission. UMass Dartmouth has recently established a single point of accountability for its STEP activities to link them more directly into the STEP Program.

In September, 1995 UMass Dartmouth (along with each of the other three campuses) submitted a STEP Plan for FY96 which commits UMass Dartmouth to coordinate its resources with those of the other UMass campuses and emerging industries to create innovative technologies which are commercially viable. It has set aside funds for rapid turn-around technology evaluations and technical assistance requests from the STEP Technology Review Panel, and has devoted funds for longer-term research, monitoring and demonstration projects.

Highlights of Industrial Relations

The following projects represent collaborative efforts of STEP partners and were undertaken at the campus centers noted.

UMass Amherst:

National Environmental Technology for Waste Prevention Institute (NETI)

Highlights

G.E. Plastics, Pittsfield — Process Visualization for Waste Prevention

Northeast Fabric Care Association — Application of Video Source Assessment Technology to the Drycleaning Industry

ChemDesign, Fitchburg — Recycling of VOCs in Chemical Processes

UMass Amherst:

Energy Analysis and Diagnostic Center (EADC)

Highlights

Filter Clean, Stoughton — Assessment of a technology to recondition air filters used on diesel engines

AirXpert, Lexington — Demonstration of an indoor demand controlled ventilation system

TF Purifiner, Florida (referral from California Environmental Technology Certfication Program) — Assessment of a bypass engine oil filtration system to extend duration between filter changes

UMass Boston:

Environmental Business and Technology Center

Highlights

Caldwell Environmental, Acton — In process of verifying the performance of bioremediation products for grease traps and oil and water separators

SolmeteX, Walpole — Demonstration of removal of heavy metals from process water

Cellini Purification Systems, Ludlow — Business assessment for applications to metal finishing industry

UMass Dartmouth:

Center for Marine Science and Technology

Highlights

New Bedford Corporation — The Use of Chitosan to Clean Water in a Recirculating Aquaculture System

AWT Environmental, New Bedford — Bioclere Technical Development Project

Satkin Mills, New Bedford — Use of Textile Waste as a Raw Material in Water Filters— Evolved into new company: SeaTech

UMass Lowell:

The Center for Environmentally Appropriate Materials and Chelsea Center for Materials Reuse

Highlights

New England Power, Westboro — Counter-pressure intrusion process for production of plastic lumber using fly ash

Robbins Company, Attleboro— Cyanide reduction in bright stripping substituting an electrolytic process for chemical stripping

Consortium including 3M, Dow, Cargill, Morflex and Monsanto, Lowell — Development of a biodegradable plastic compost bag

Other Program Development Efforts:

In order to implement the STEP initiative, the following efforts were initiated and successfully completed:

- The STEP Technology Review Panel has been formed and Mission Statements developed. A list of STEP Panel members is found on page 19.
- A STEP Intake Process and Intake Form has been finalized.
- An internal STEP implementation group consisting of representatives of each of the partnering agencies was formed and meets weekly, chaired by the EOEA.
- A database of STEP companies has been started by UMass.
- Monthly meetings of the existing EOEA/UMass Joint Committee have been expanded to provide a forum to oversee the UMass implementation of the program.
- An aggressive outreach program by MOBD has begun to identify innovative envirotechnologies including presentations and the printing and distribution of a STEP Overview and STEP brochure. Copies of the STEP Overview and brochure are available.
- DEP's IT Program has finalized a workplan for the use of IT coordinators to facilitate the review and expedited permitting of innovative technologies. The workplan includes publication of a guidance document and outlines protocols for staff to follow when reviewing ITs; quarterly meetings of the IT workgroup; development of a network-based clearinghouse to collect and share information on ITs; publicity through Department newsletters; presentations to staff; and training.
- UMass Boston has utilized its STEP dollars to support the implementation of the STEP program through the work of the Director of the Environmental Business and Technology Center (EBTC) and the recently hired environmental technology specialist, and has developed an on-line information system, Envirotech On-Line, to support technology transfer.
- OTA began the development of protocols to guide Pollution Prevention (P2) demonstrations.
- DEP has supported national efforts to standardize protocols and reviews of ITs through the Interstate Technology and Regulatory Cooperation Work Group (ITRC).
- DOER funded and staffed the review of energy efficient technologies through the services of EADC.
- Environmental Affairs has integrated STEP into the Clean State Initiative to facilitate technology demonstrations.

- Efforts began to coordinate research efforts of the partnering agencies including EOEA, DEP, OTA, TURI (the Toxics Use Reduction Institute at UMass in Lowell) and NETI (the National Environmental Technology for Waste Prevention Institute in Amherst) including joint meetings and the identification of 39 potential STEP related research projects.

- Environmental Affairs has aggressively sought additional funds through the Open Space Bond Bill, the Seaport Bond Bill, and the EPA's ETI fund for 1995 and 1996. ETI funds were granted to Massachusetts environmental agencies in support of STEP related activities, including the development and provision of DEP training in Pollution Prevention ITs and the establishment of a center to test new on-site wastewater treatment systems.

- DEP funds have been dedicated to support the establishment of an envirotech center at the Massachusetts Military Reservation in Otis to test, demonstrate and provide job training in new innovative remediation technologies.

- Discussions were held with a number of private entities and the Massachusetts Technology Development Corporation regarding the startup of a venture capital fund to assist new STEP technologies. Given the lack of sound business planning, marketing expertise and attention to business management, which characterized many of the companies seeking STEP assistance in its first year, efforts to establish the fund were given low priority.

STEP

STEP Resources Available and Utilized in 1995 Include:

In order to effectively coordinate the activities of the three agencies, the following resources were dedicated in the first year to STEP start-up and implementation:

Direct Funding:

- $1.5 million to the University of Massachusetts System

This $1.5 million was allocated to four campuses in the following manner to fund the programs listed:

Amherst:
National Environmental Technology for Waste Prevention Institute (NETI)

Boston:
Environmental Business Center and the Environmental Testing Facility

Lowell:
Chelsea Center for Materials Reuse and the Center for Environmentally Appropriate Materials

Dartmouth:
Marine Technology, Environmental, and Engineering Programs

- $100,000 from the Environmental Protection Agency's (EPA's) Environmental Technology Initiative (ETI) to support the hiring of a full time STEP Innovative Technology Coordinator at DEP
- $200,000 from DOER to contract for STEP technical assistance services from the Energy Analysis and Diagnostics Center (EADC) at UMass in Amherst

Additional State Support:

- 1.5 Full Time Equivalents (FTEs): STEP Staff in the Executive Office of Environmental Affairs
- 1 FTE: MOBD staff who dedicated time to STEP include an Environmental Technology Industry Specialist and a Business Specialist
- 1 FTE : DOER
- 2 FTE: Innovative Technology (IT) Coordinators in DEP's Bureau of Waste Site Cleanup and the Commissioner's Office (the latter funded by EPA grant), in addition to a total of 7 part-time Coordinators in all other bureaus and the four DEP regional offices.
- .5 FTE: OTA

STEP

STEP: A PROMISING FUTURE

The Massachusetts Legislature, with the support of the Governor, has again provided $1.5 M to the University of Massachusetts to support-STEP related work in FY 1996.

The first year of STEP funding has been a bold experiment in state agency collaboration and public/private partnership. It has also been an important learning process for all the players involved in STEP.

Significant progress has been made. New systems for technical, business and regulatory assistance have been developed, tested and adapted. Increasingly effective working relationships have been established among Environmental Affairs, Economic Affairs and UMass.

Economic Affairs is now more attuned to the needs of envirotech companies and other firms dealing with environmental technologies than ever before. Environmental Affairs is increasingly responsive to the regulatory and permitting needs of such companies. UMass has steadily developed a solid R&D agenda and technical assistance capacity responsive to the needs of industry in Massachusetts.

Most importantly, an initial group of dozens of Massachusetts companies have effectively interacted with STEP and received some form of assistance with their innovative technology. As STEP continues to develop and improve as a comprehensive program for technical, business and regulatory services, more and more companies will surely benefit from this program. In addition, Massachusetts will move ever closer to its goal of becoming a world leader in the development and promotion of new environmental and energy-efficient technologies. This, in turn, will result in economic growth and environmental improvement for the Commonwealth.

NEXT STEPS

- Continued refinement / streamlining of systems for technical, business and regulatory assistance.
- Closer university / industry / government ties in developing R&D agenda.
- Increased number of companies benefiting from STEP program.
- Improved communications about STEP program — newsletter, annual report, potential conference, etc.
- Additional development of spin-off activities.

STEP

STEP TECHNOLOGY REVIEW PANEL

STEP assembled a panel of independent experts to review environmental and energy-efficient technologies and advise the Secretary of Environmental Affairs on the allocation of STEP resources for candidate companies.

Erik Butler
Bay State Skills
Corporation

John F. Ciccarelli
Massachusetts Small
Business
Development Center

Stephen R. Connors
MIT Energy Laboratory

Joseph Cooney
UMass Boston
Environmental Science
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Ghazi Darkazalli
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Elizabeth Harris
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Merna Hurd, P.E.
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Health Sciences
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Robert Kirchhoff
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Department

Robert Kispert
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Dr. Robert Lisauskas
Riley Research Center
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Sheila Lynch
Northeast Alternative
Vehicle Consortium

Paul Maeder
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Service Company

Tim Thompson
Northeast Sustainable
Energy Association

Kenneth Tierney
Raytheon

JOINT COMMITTEE

Established by the EOEA Secretary and UMass President, the Joint Committee oversees UMass/EOEA collaboration in STEP.

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STEP WORK GROUP

The STEP Work Group coordinates the delivery of STEP assistance to envirotech companies.

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Chelsea Center for Materials Reuse
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STEP

Participating Company Profile

SolometeX, Inc.

Walpole, Massachusetts

Background

Incorporated in February 1994, SolmeteX, Inc. developed a new technology, Chromatography: X (CT: X), for the removal of toxic, heavy metals from process and wastewater, groundwater and drainage water. However, unlike other systems, the CT: X allows this water to then be used in the ultra-pure and mega-pure reprocessing markets, making this system more efficient than any other technology currently available.

Assistance Requested

Performance verification in mercury wastewaters and pilot demonstration for copper removal in wastewater.

STEP Actions/Results

STEP has provided its extensive network of contacts to obtain strategic partnering in this endeavor. UMass Boston is undertaking performance verification in mercury wastewaters. UMass Lowell is developing demonstration for copper removal. This includes a long term plan of working with the Office of Technical Assistance to investigate additional partnering agreements and applications of CT: X with other industries. The Massachusetts Office of Business Development (MOBD) is helping SolmeteX locate appropriate manufacturing and assembly facilities and financing in Massachusetts, as well as focus its marketing efforts.

In addition, STEP has recommended a permit review by the Department of Environmental Protection (DEP) to identify the necessary requirements for this technology, as well as potential markets.

The technology offers significant metals reductions in industrial processes and waste streams, including mercury removals in high flow discharges down to 1 part per million

STEP

Participating Company Profile

SeaTech

New Bedford, Massachusetts

Background

SeaTech's founder, Victor Satkin, initiated the production and development of home aquarium water filters from acetate waste produced at textile mills. Already active as a member of the textile industry, Satkin recognized the potential application of wet fiber acetate for new products. Traditionally in the textile process, this wet fiber acetate was too costly to dry for reprocessing and shipping, and was disposed of (by the ton) in a local landfill. Satkin conceptualized the idea of reducing the waste stream using raw material for new product manufacturing.

Assistance Requested

SeaTech requested assistance investigating the feasibility of utilizing acetate waste for the development of home aquarium filters. Through further efforts, including product research and marketing analysis, SeaTech will be better positioned to distribute its product.

STEP Actions/Results

Working with the Advanced Technology Center for Business, Textiles and Manufacturing (ATC) at the University of Massachusetts Dartmouth, SeaTech was able to research potential commercial barriers and effectively develop and launch its product. SeaTech manufactured a filter prototype, obtained fiber and property analysis information, consulted on a strategic business plan, and gained valuable research data on market potential and pricing. SeaTech represents the first idea-to-market product developed in cooperation with ATC.

SeaTech is now an operating company, generating employment in the City of New Bedford.

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